

TECHNICAL NOTE 3						 ASHLEY HELME ASSOCIATES
Project	Land off Henthorn Road, Clitheroe			Project No	1677	
Contact		Originator	SJH	Date	24/06/21	

LAND OFF HENTHORN ROAD, CLITHEROE APPLICATION REF 3/2019/0999

1.0 Introduction

- 1.1 Ashley Helme Associates Limited (AHA) are appointed by Gladman Developments Ltd (GDL) to provide highways/transportation advice with respect to the planning application for residential development on land off Henthorn Road, Clitheroe (henceforth referred to as the Site).
- 1.2 The Site comprises two parcels of land to the north and south of Henthorn Road. Both areas of Site are presently agricultural/field land. The proposed development comprises up to **160** dwellings, as follows:
- (i) Northern Site: 35 dwellings,
 - (ii) Southern Site: 125 dwellings.
- 1.3 AHA prepared the TA report (ref 1616/2/B) that accompanied the planning application for a residential scheme of 110 dwellings on a site to the north of the current application Site. This scheme (application ref 3/2018/08688) was promoted by GDL and was approved following an appeal. The approved scheme is referred to as **Phase 2**. The proposed scheme is referred to as **Phase 3**.
- 1.4 AHA has prepared two Transport Assessment reports for the current Phase 3 application, being:
- (i) First: TA Report (ref 1677/1/A), October 2019, and
 - (ii) Second: TA Report (ref 1677/1/B), March 2020.
- 1.5 The second TA report was prepared in response to comments from Lancashire County Council (LCC), who are the highway authority for all of the roads and junctions that form part of the TA study network. The second TA report was prepared to address issues raised by LCC, being:
- (i) Proposed access arrangements,
 - (ii) Financial contribution towards the No2 bus service,
 - (iii) Traffic impact assessment using recorded residential trip rates, and
 - (iv) Distribution of generated traffic.
- 1.6 This Technical Note No 3 has been prepared specifically to consider the distribution of development generated traffic and its assignment to the local highway network. AHA and GDL met with LCC highways officers on 26 August 2020 on site to discuss distribution. It was suggested that it be useful to understand the travel patterns of existing residents at the southern end of Henthorn Road, ie those near to the application Site. To this end, a survey of the Garnett Road/Henthorn Road junction would give a good indication of the split between residents using:
- (i) Garnett Road/Lancaster Drive, and
 - (ii) Henthorn Road/Eshton Terrace.

2.0 Traffic Flows

2.1 Traffic Counts

2.1.1 AHA undertook manual classified turning counts at the junctions of:

- (i) Henthorn Road/Garnett Road/Mytton View,
- (ii) Lancaster Drive/Edisford Road (**SJ1** in the TA reports), and
- (iii) Henthorn Road/Eshton Terrace/Thorn Street (**SJ6** in the TA reports).

The surveys were undertaken between 0730-0930 and 1615-1815 and queues were recorded in 5 minute intervals at the same time.

2.1.2 An analysis of the survey data confirms that the peak hours are:

- (i) AM: 0815-0915, and
- (ii) PM: 1615-1715.

The results of the traffic survey are summarised on Figure TN3/1. The flows are shown in vehicles.

2.2 Covid-19

2.2.1 Prior to the surveys being undertaken, AHA liaised with LCC highways officers to seek confirmation that it was acceptable to carry out the surveys. LCC responded (20 April 2021 email) to confirm that the surveys could go ahead. Notwithstanding this, it is accepted that the surveys took place during a time when some national restrictions were still in place and this could have an effect on the recorded flows. AHA has available traffic count data collected in June 2018 for SJ1 and SJ6. AHA has compared the total junction flows recorded in 2021 with the 2018 data. The flows are:

- | | | | | |
|------|------|----|---------------------|----------------------|
| (i) | SJ1: | AM | 2018 = 675 vehicles | 2021 = 632 vehicles |
| | | PM | 2018 = 889 vehicles | 2021 = 709 vehicles, |
| (ii) | SJ6: | AM | 2018 = 717 vehicles | 2021 = 684 vehicles |
| | | PM | 2018 = 864 vehicles | 2021 = 785 vehicles. |

At SJ1, the 2021 AM flows are only 6% lower than those recorded in 2018. In the PM peak hour, the difference is 20%. At SJ6, the 2021 flows are broadly similar to the 2018 flows, being 5% lower in the AM peak hour and 9% lower in the PM peak hour.

2.2.2 The approach adopted in this Technical Note No 3 is to apply an uplift factor to the recorded 2021 flows so that the flows are scaled up to the same level as the 2018 counts. The uplift factors are:

- | | | | |
|------|------|----|--------|
| (i) | SJ1: | AM | 1.068 |
| | | PM | 1.254 |
| (ii) | SJ6: | AM | 1.048 |
| | | PM | 1.101. |

The resultant 'adjusted' 2021 traffic flows at SJ1 and SJ6 are presented on Figure TN3/2.

2.3 Traffic Growth

2.3.1 The analysis years adopted in both TA reports are 2024 and 2029 and these are similarly adopted in this Technical Note No 3.

- 2.3.2 The National Transport Model (NTM) TEMPRO is used as a basis for deriving local growth factors. The NTM growth factors adopted to estimate year 2024 and 2029 traffic flows, from the 2021 'adjusted flow', are set out in Technical File Note 1/A.
- 2.3.3 Figures TN3/3 and TN3/4 present the 2024 and 2029 'Growthed' AM & PM peak hour traffic flows at SJ1 and SJ6.

2.4 Committed Developments

- 2.4.1 The AHA TA reports include traffic estimates for the following committed schemes:
- (i) 3/2014/0597: Land off Waddington Road (275 dwellings),
 - (iv) 3/2013/0711: Land off Henthorn Road (140 dwellings),
 - (vi) 3/2017/0433: Land off Henthorn Road (24 dwellings),
 - (vii) 3/2018/08688: Land off Henthorn Road (110 dwellings).
- 2.4.2 The scheme at Waddington Road is not forecast to add any traffic to SJ1 and SJ6 and, therefore, is not considered further in this Technical Note No 3.
- 2.4.3 The scheme of 140 dwellings (3/2013/0711) by Story Homes is now fully sold. Traffic generated by this scheme will have been recorded in the 2021 traffic surveys. Therefore, this site is not considered further in this Technical Note No 3.
- 2.4.4 Traffic estimates for 3/2017/0433 and 3/2018/08688 are set out on Figures TN3/5 and TN3/6 respectively. The estimates are based on agreed trip rates with LCC and the pattern of movement recorded in the 2021 traffic counts (discussed below).

2.5 Base Traffic Flows

- 2.5.1 Figures TN3/7 and TN3/8 presents the year 2024 and 2029 Base flows at SJ1 and SJ6. These are derived by the combination of year 2024 and 2029 factored flows (Figures TN3/3 and TN3/4) and the traffic generated by the permitted developments (Figures TN3/5 and TN3/6).

2.6 Distribution and Assignment

- 2.6.1 The LCC consultation response (4 June 2020) states:

"In my previous response I suggested that a number of drivers may be diverting away from the Henthorn Road / Thorn Street junction to avoid the congestion that is present and utilising side roads such as Garnett Road / Lancaster Drive, Seedall Avenue or Faraday Avenue. The applicant's response was to load 31% of the traffic generated by the development to the Garnett Road / Lancaster Drive route out on to Edisford Road. Unfortunately, no clear evidence has been presented that can be scrutinised whether or not this is representative of the levels of diverting traffic that may be using this route and the other two route options have not been considered, or the local consequences."

- 2.6.2 Following a meeting on Site with LCC officers on 26 August 2020, it was agreed that a traffic survey should be undertaken at the junction of Henthorn Road/Garnett Road/Mytton View. This would provide a useful indicator as to the split of traffic travelling to/from the new residential developments at the southern end of Henthorn Road. The results of the survey are presented on Figure TN3/1.
- 2.6.3 The 2021 recorded splits between Garnett Road and Henthorn Road are:

(i) From Henthorn Road (S)		To Garnett Road	To Henthorn Road (N)
	AM	22%	78%
	PM	24%	76%

(ii) To Henthorn Road (S)		From Garnett Road	From Henthorn Road (N)
	AM	19%	81%
	PM	22%	78%.

- 2.6.4 The recorded distribution at the Henthorn Road/Garnett Road/Mytton View junction is shown on Figure TN3/9. The split at SJ1 and SJ6 is also estimated in the same way using the recorded split of turning movements. The % distribution at SJ1 and SJ6 is also shown on Figure TN3/9.

2.7 Trip Rates

- 2.7.1 LCC undertook a count of the Taylor Wimpey scheme (Gladman Phase 1) in January 2020. Based on this, LCC have calculated the following recorded trip rates:

PEAK	ARR	DEP	2-WAY
AM	0.159	0.577	0.737
PM	0.522	0.248	0.770.

These trip rates were adopted in the second AHA TA report (ref 1677/1/B).

- 2.7.2 Based on the LCC recorded trip rates, the resultant trip generations for the proposed 160 dwellings scheme are:

PEAK	ARR	DEP	2-WAY
AM	25	92	117
PM	83	40	123.

- 2.7.3 Figure TN3/10 presents the total traffic generated by the proposed development in the AM and PM peak hours at SJ1 and SJ6, based on the % distribution on Figure TN3/9 and the LCC recorded residential trip rates.

2.8 With Development

- 2.8.1 The estimated 2024 and 2029 AM and PM peak hour With Development traffic flows at SJ1 and SJ6 are presented on Figures TN3/11 and TN3/12.

3.0 Junction Modelling

3.1 Queue Surveys

- 3.1.1 Queues were recorded on all external approach arms at SJ1 and SJ6. Data was collected at the same time as the AM & PM peak period traffic count surveys (ie on 22 June 2021).
- 3.1.2 The survey recorded queues in 5-minute intervals. The survey recorded the queue on each arm at the 5-minute mark (eg at 0800, 0805, 0810, etc). This provides a useful indicator of the current performance level and also assists with PICADY calibration.

3.2 Model Calibration

- 3.2.1 The process of model calibration involves:

- (i) Construct PICADY models (within JUNCTIONS 9) for SJ1 and SJ6;
- (ii) Use 2021 recorded traffic count data;
- (iii) Compare model output queues to recorded queues;
- (iv) If necessary, make small adjustments to model geometry to provide 'best match' between model and recorded queues.

4.0 SJ1: Lancaster Drive/Edisford Road

4.1 Queue Survey and Model Validation

4.1.1 Review of the SJ1 queue survey data collected in 2021 shows that:

APPROACH	MEAN SPOT QUEUE (Vehs)	
	AM	PM
Lancaster Drive	0.8	0.2
Edisford Road	0.0	0.0

4.1.2 The queue survey confirms that small queues were recorded on the 5-minute interval marks. This means that any queues that form within the 5-minute interval period are clearing. The survey results provide clear evidence that SJ1 is presently operating in an **acceptable** manner.

4.1.3 A PICADY model has been constructed for the 2021 AM & PM peak hour Count situations. The results of this exercise are presented in Table TN3/1. A review of Table TN3/1 shows that PICADY model of SJ1 correlates well with the recorded queues. It is concluded that the PICADY model is suitable to test the traffic impact of the Proposed Development in years 2024 and 2029.

4.2 2024 and 2029

4.2.1 Table TN3/2 presents the results of the PICADY modelling for S1 for years 2024 and 2029.

4.2.2 Review of Table TN3/2 shows that the existing SJ1 priority-controlled junction is predicted to operate with a high degree of spare capacity and with negligible queues/delays in the 2024 AM & PM peak hour Base situations. Table TN3/2 shows that the addition of traffic generated by the proposed development has no perceptible effect on the performance of the junction in year 2024.

4.2.3 Similarly, the PICADY modelling confirms that the existing SJ1 priority-controlled junction is predicted to operate with a high degree of spare capacity and with negligible/small queues/delays in the 2029 AM & PM peak hour Base situations. Table TN3/2 shows that the addition of traffic generated by the proposed development does not materially alter the performance of the junction in year 2029.

4.2.4 It is concluded that the traffic impact of the Proposed Development at SJ1 in assessment years 2024 and 2029 is acceptable.

5.0 SJ6: Henthorn Road/Eshton Terrace/Thorn Street

5.1 2021 Queue Survey and Model Validation

5.1.1 Review of the SJ6 queue survey data collected in 2021 shows that the mean spot queue for all arms are:

APPROACH	MEAN SPOT QUEUE (Vehs)	
	AM	PM
Thorn Street (W)	0.0	0.2
Henthorn Road (S)	0.1	0.2
Thorn Street (E)	0.8	1.8
Henthorn Road (N)	0.0	0.0

5.1.2 The queue survey confirms that small/negligible queues were recorded on the 5-minute interval marks. This means that any queues that form within the 5-minute interval period are clearing. The survey results provide clear evidence that SJ6 is presently operating in an **acceptable** manner.

5.1.3 A PICADY model has been constructed for the 2021 AM & PM peak hour Count situations and using the DIRECT form of flow entry. The output queues from this model are presented in Table TN3/3. A

review of Table TN3/3 shows that queues forecast by the PICADY model of SJ6 correlate well with the recorded queues. It is concluded that the PICADY model is suitable to test the traffic impact of the Proposed Development in years 2024 and 2029.

5.2 2024 and 2029

- 5.2.1 The modelling results for years 2024 and 2029 are presented in Table TN3/4. A review of Table TN3/4 shows that SJ6 is predicted to operate in an acceptable manner and with small queues and delays in the 2024 and 2029 AM peak hour Base situations. The PICADY modelling demonstrates that the addition of traffic generated by the proposed Phase 3 scheme generally does not materially alter the performance of the junction. The model shows that Henthorn Road (S) is starting to experience slight deterioration by year 2024 and worsens further by year 2029. As would be expected, the addition of traffic generated by the proposed Phase 3 scheme leads further worsening of this arm in the AM peak hour. However, the level of performance predicted by PICADY for Henthorn Road (S) in the 2029 AM peak hour With Development situation (ie worst case scenario) could not reasonably be described as severe, which is the test set out in NPPF.
- 5.2.2 In the PM peak hour, the PICADY modelling shows that the junction generally operates in an acceptable manner in the 2024 and 2029 Base situations. However, the model indicates that the Thorn Street (E) approach to the junction is starting to experience a slight deterioration in performance by 2024 and there is a further worsening of performance by year 2029. As would be expected, the PICADY model shows further deterioration of the performance of Thorn Street (E) if the proposed Phase 3 development proceeds. The proposed Phase 3 development is predicted to increase the queue on Thorn Street (E) by 3.5 vehicles in 2024 and by 4.4 vehicles in year 2029. The corresponding increases in delay are 18.54 seconds (in 2024) and 21.67 seconds (in 2029). However, the level of performance predicted by PICADY for Thorn Street (E) in the 2029 PM peak hour With Development situation (ie worst case scenario) could not reasonably be described as severe, which is the test set out in NPPF.

5.3 Limitations of PICADY Model

- 5.3.1 The LCC Consultation Response (dated 5 October 2018) refers to the '**courteous nature**' of drivers using SJ6. It is common on highway networks for junctions to operate in a different manner to the format of the junction. The layout of SJ6 gives motorists on Henthorn Road priority over users on Thorn Street (E) and Thorn Street (W). However, site observation suggests that Henthorn Road drivers regularly slow/stop to allow vehicles on the Thorn Street (E & W) arms to complete turning movements. This is at odds with the format of the junction. This type of operation is similar to some new residential schemes which include crossroad junctions that have no markings and, therefore, no user has priority over another user. This fosters an environment where a resident is cooperative (or courteous) with other residents and this leads to slower through speeds and a safer operation.
- 5.3.2 The PICADY modelling software used to test the performance of SJ6 does not include a 'courteous nature' setting. The PICADY program assumes that vehicles follow the format of the junction, ie vehicles on the minor arm give-way to vehicles on the major arm. The modelling of SJ6 confirms that the junction will operate in an acceptable manner if the proposed Phase 3 development is implemented but it is important to recognise that the model may produce overly-pessimistic results as it cannot take into account the courteous nature of drivers using the junction.

5.4 Dynamic Reassignment

- 5.4.1 It is also important to recognise that some of the vehicles that pass through SJ6 could use alternative routes. For example, traffic travelling northbound on Henthorn Road to Edisford Road could use:
- (i) Garnett Road/Lancaster Drive,
 - (ii) Seedall Avenue, or
 - (iii) Faraday Avenue.

The same is true for the contrary movement.

A review of Figure TN3/1 shows that 17% (AM) and 19% (PM) of the total junction traffic travels north and south through SJ6 and could use an alternative route. If it transpires that SJ6 gets increasingly stressed in future years then some traffic may divert to use alternative routes. This would help the performance of the junction.

5.5 Improvement Scheme

- 5.5.1 Notwithstanding the results of the PICADY analysis, the limitations of the PICADY model and the potential for users to select alternative routes SJ6 may still experience stress in the coming years. Consequently, the applicant has investigated the potential to carry out modest improvements at SJ6 commensurate with the level of development impact.
- 5.5.2 There is a practical problem in delivering major change to SJ6 due to limited highway land being available and the proximity of third-party properties. The approach adopted is to identify a number of small scale works that could collectively offer improvement to the functioning of the junction.
- 5.5.3 Drg No 1677/12 shows an improvement scheme. The main features are:
- (i) Undertake widening on the west side of Henthorn Road over a distance of about 25m. This would increase the clear carriageway width (ie excluding parked vehicles) to 5.5m. Although a modest increase, it would provide additional lateral clearance between north and southbound vehicles on Henthorn Road and help to promote free flow conditions.
 - (ii) Slightly realign the centreline marking on Henthorn Road to position a right turning vehicle (to Eshton Terrace) so as to make the northbound movement through the junction easier to negotiate,
 - (iii) Introduce 'Keep Clear' markings on the southbound side of Henthorn Road at Eshton Terrace. This helps to overcome a southbound vehicle on Henthorn Road blocking the Eshton Terrace exit,
 - (iv) Reinstate the red surface dressing at the junction which has been worn away. This helps to reinforce the existing 20mph speed limit on Henthorn Road and is complementary to fostering a 'courteous nature' at the junction, and
 - (v) Introduce tactile paving at the existing dropped kerb crossing locations on Eshton Terrace and Thorn Street (W).

TECHNICAL FILE NOTE 1A						 ASHLEY HELME ASSOCIATES
Project	Henthorn Road, Clitheroe			Project No	1677	
Contact		Originator	AHH	Date	24.06.21	

Traffic Growth: National Transport Model (NTM)

Methodology

Methodology for growing background traffic from count year (2021) to Future Years (2024 & 2029) is to use the National Transport Model (NTM) methodology, using the following criteria:

- Ribble Valley 003 MSOA geographical area,
- All purpose car driver trips,
- Area type: All
- Road type: All

2021 to 2024 <Future Year>

AM peak period: 1.0250

PM peak period: 1.0236

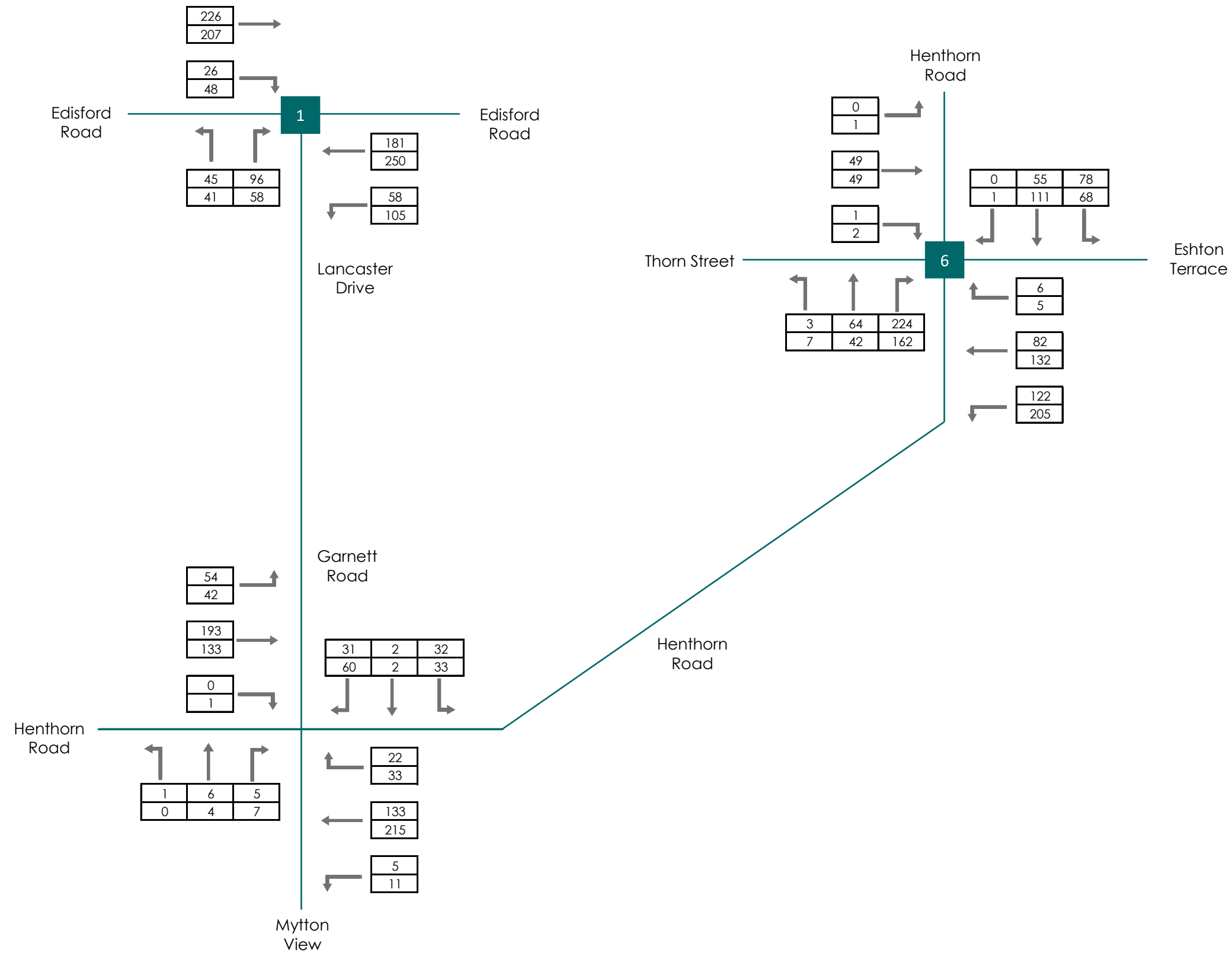
Adopt average growth factor: 1.0243

2021 to 2029 <Future Year>

AM peak period: 1.0639

PM peak period: 1.0608

Adopt average growth factor: 1.0624



Key:

Priority Control

Notes:

1. AHA Counts 22.06.21

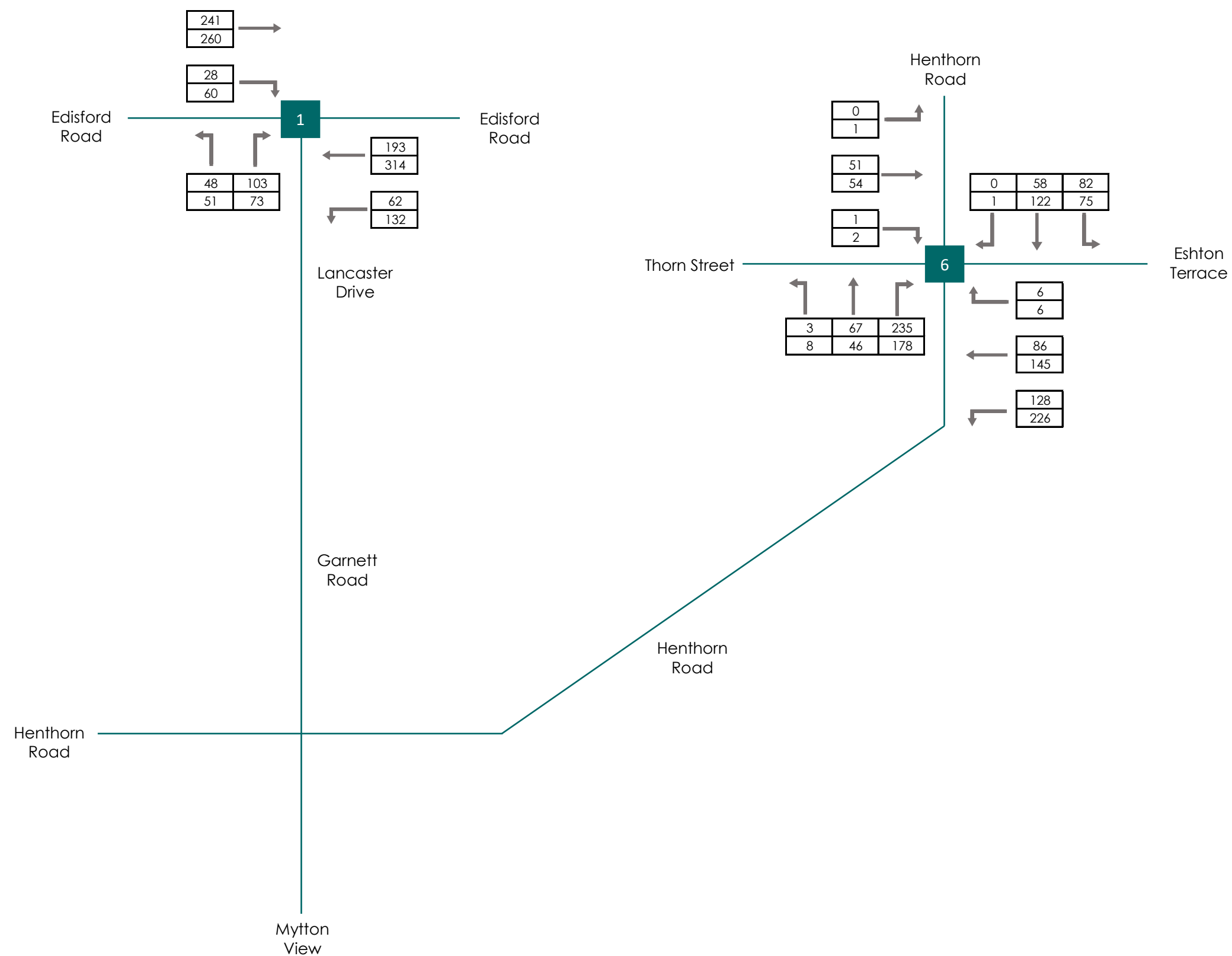
AM 0815-0915
PM 1615-1715

FIGURE TN3/1

2021 TRAFFIC COUNT
AM & PM PEAK HOURS



ASHLEY HELME
ASSOCIATES



Key:

 Priority Control

Notes:

1. Uplift factors applied to 2021 count data

AM 0815-0915
PM 1615-1715

Factors: SJ1

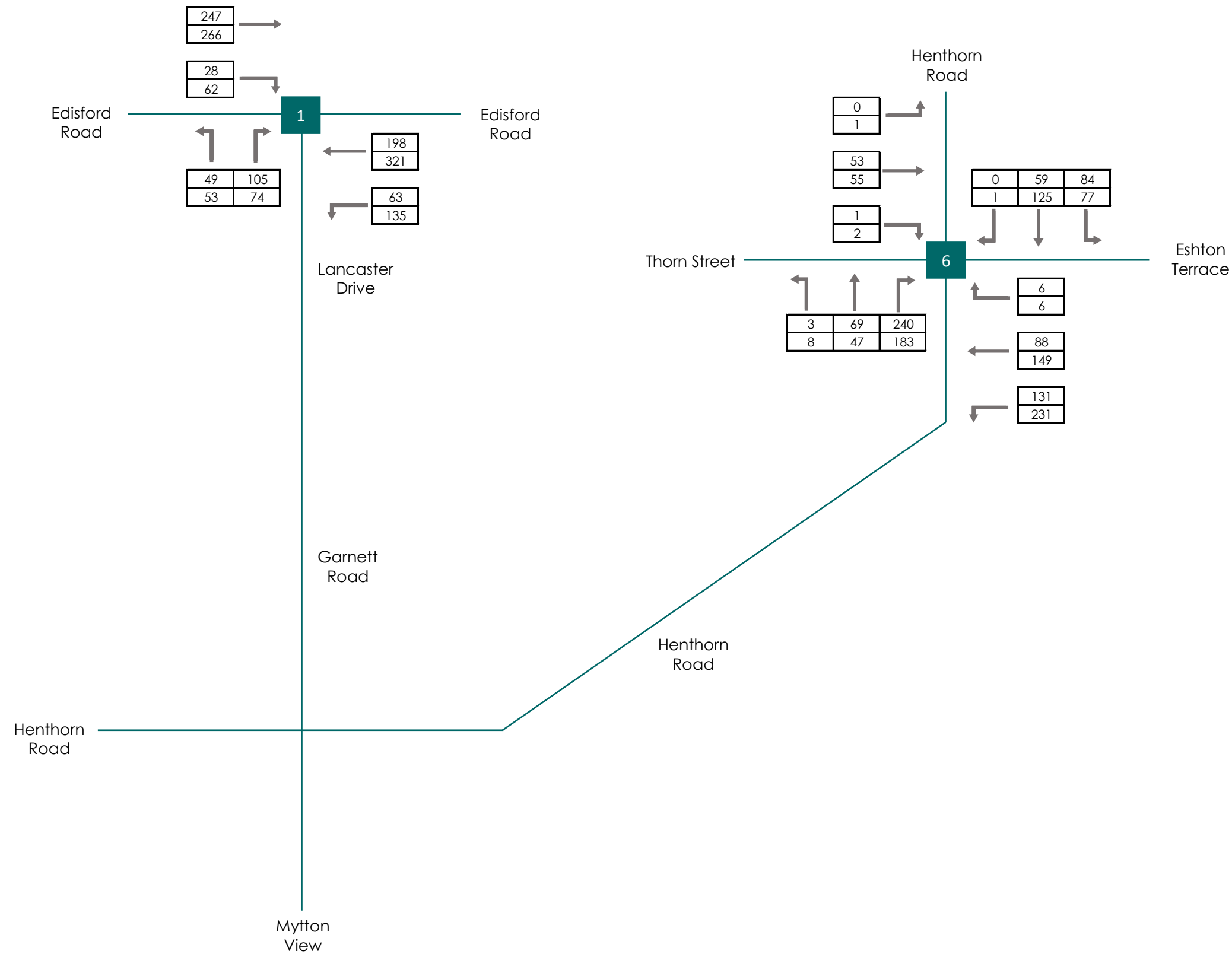
AM 1.068
PM 1.254

Factors: SJ6

AM 1.048
PM 1.101

FIGURE TN3/2

ADJUSTED 2021 COUNT
AM & PM PEAK HOURS



Key:

Priority Control

Notes:

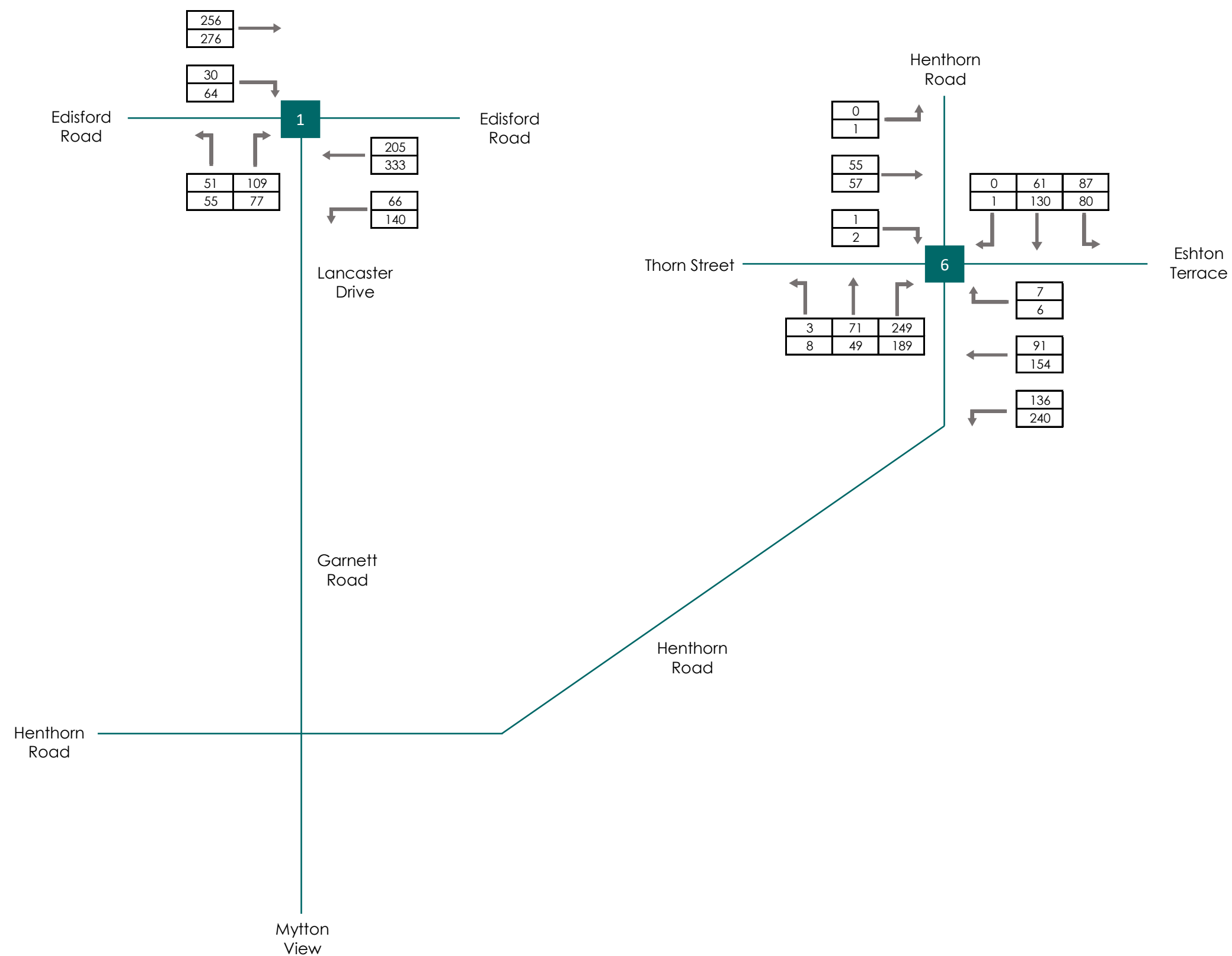
1. Growth factors in Technical Filenote 1A applied to adjusted 2021 count

AM 0815-0915
PM 1615-1715

NTM Factor
2021-2024 1.024

FIGURE TN3/3

2024 FACTORED COUNT
AM & PM PEAK HOURS



Key:

Priority Control

Notes:

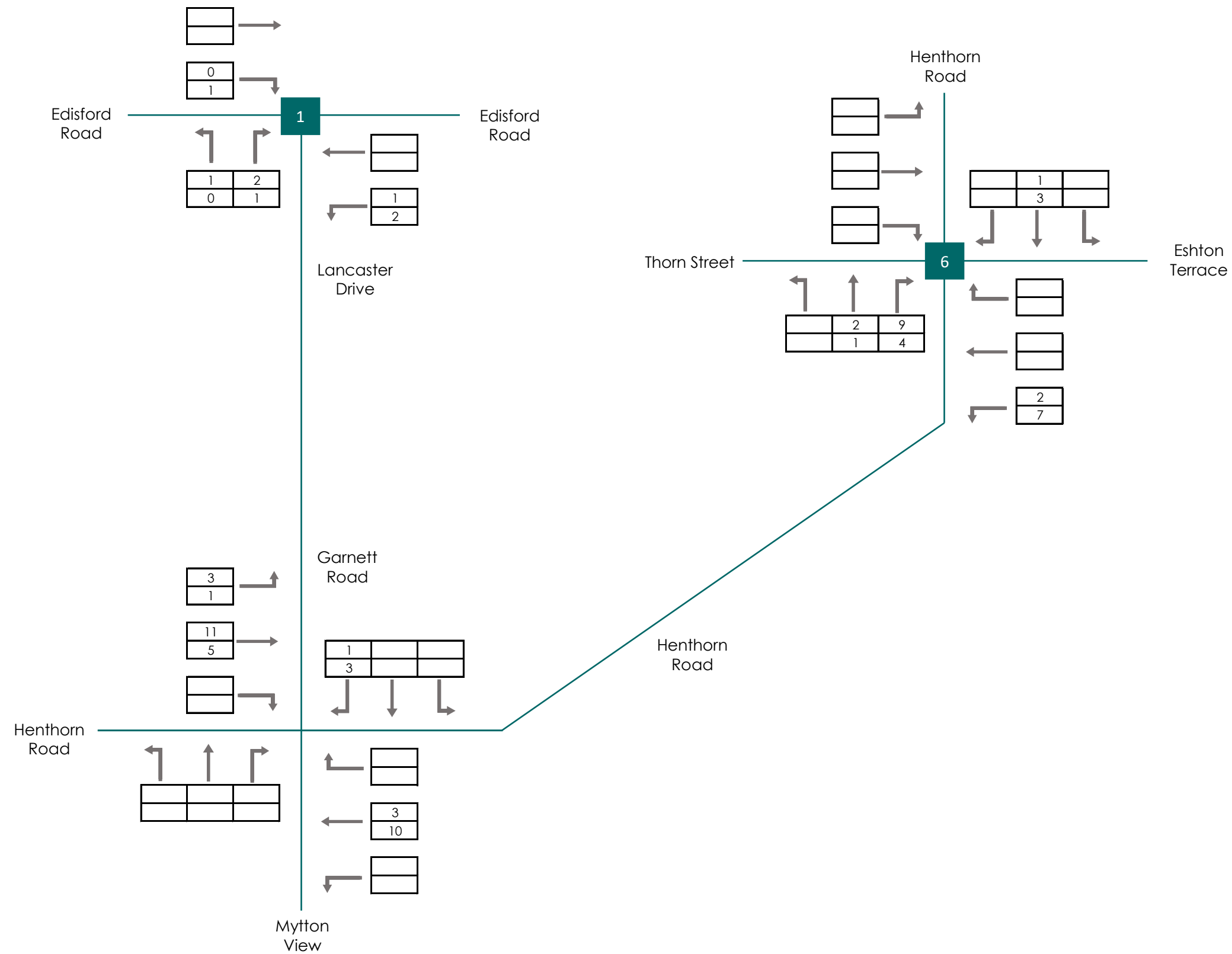
1. Growth factors in Technical Filenote 1A applied to adjusted 2021 count

AM 0815-0915
PM 1615-1715

NTM Factor
2021-2024 1.062

FIGURE TN3/4

2029 FACTORED COUNT
AM & PM PEAK HOURS



Key:

Priority Control

Notes:

1. Based on LCC residential trip rates
2. Distribution based on Figure TN3/9

	ARR	DEP	2WAY
AM	4	14	18
PM	13	6	19

AM 0815-0915
PM 1615-1715

FIGURE TN3/5

COMMITTED DEVELOPMENT: HENTHORN ROAD
17/0433 24 DWELLINGS
AM & PM PEAK HOURS

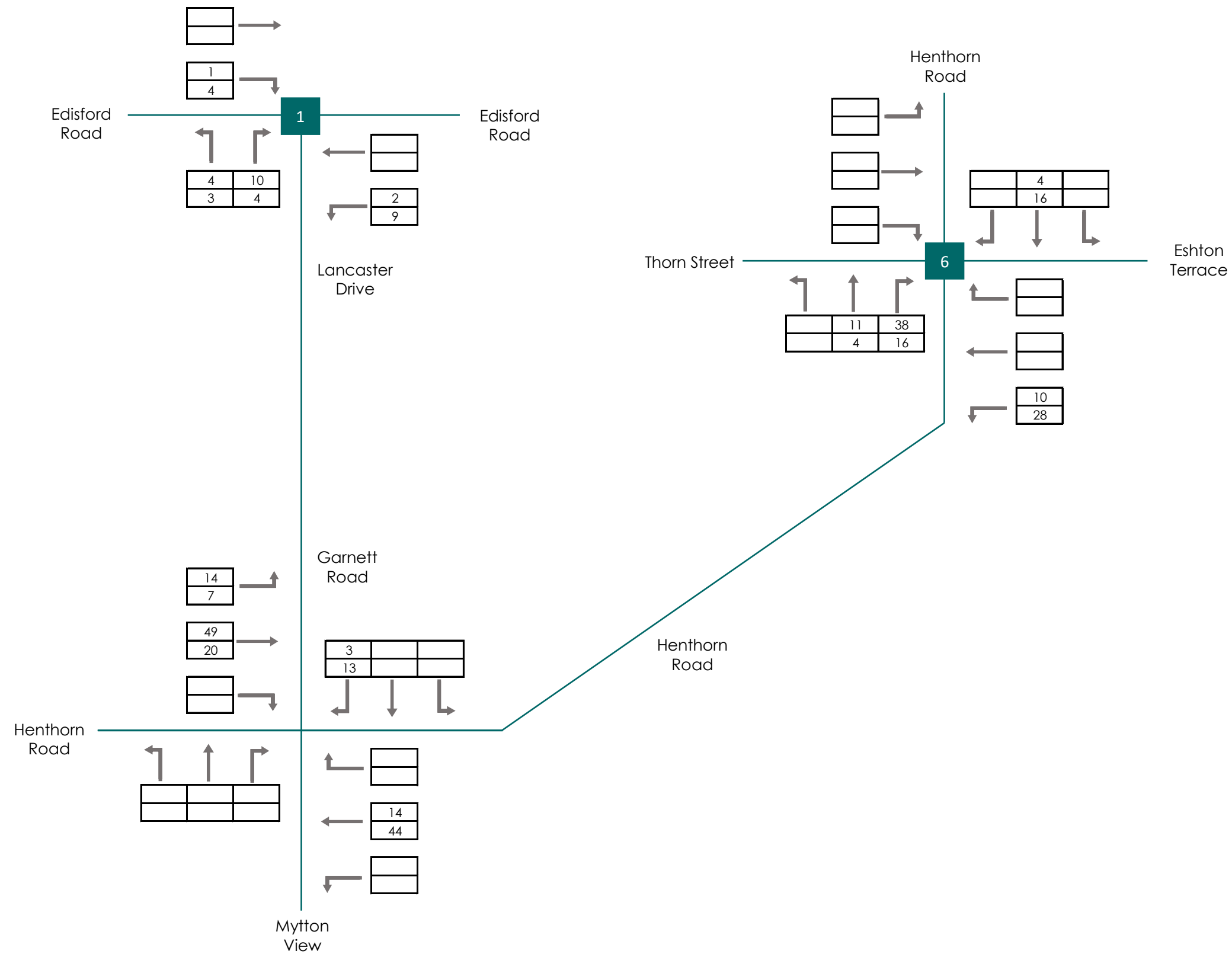
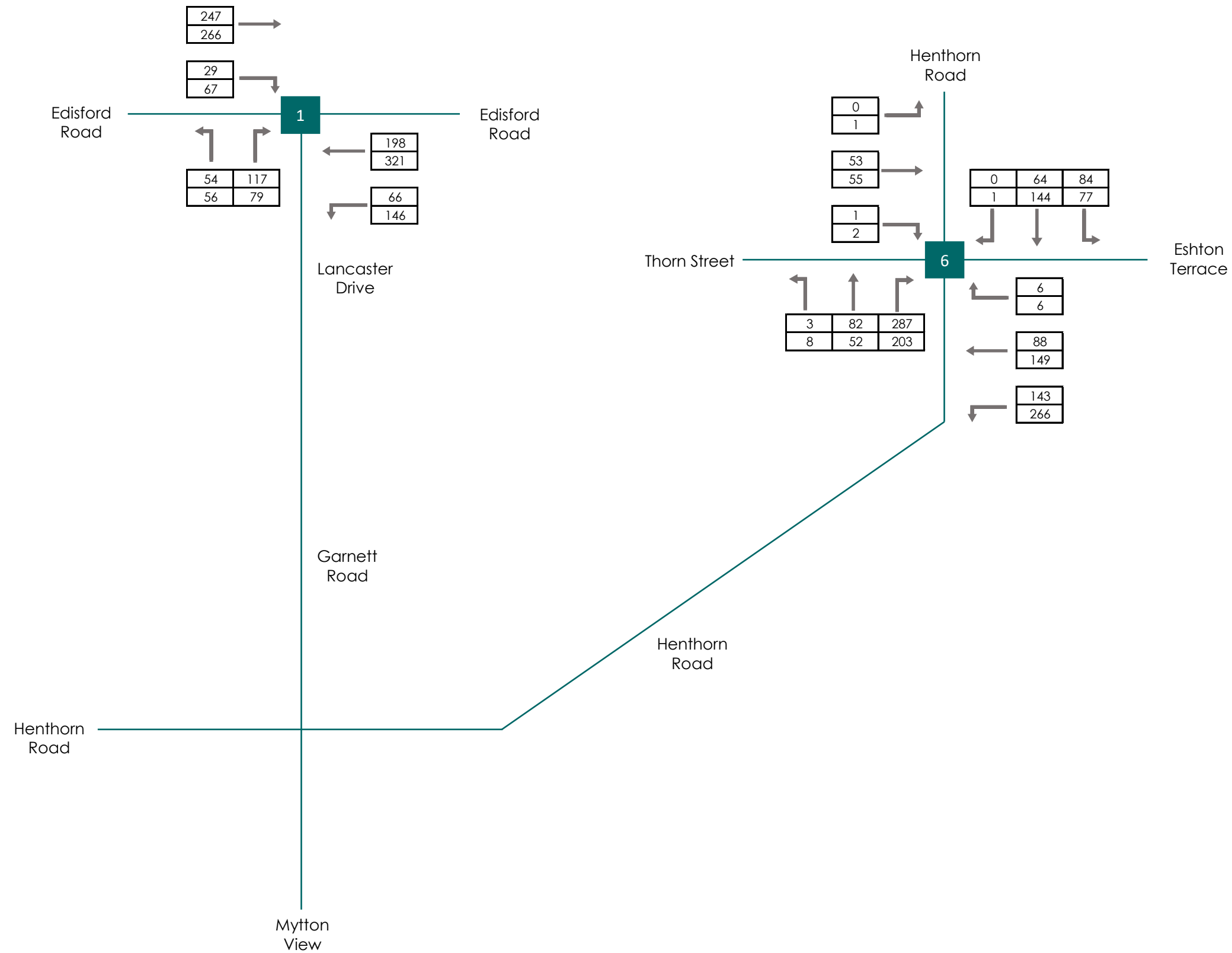


FIGURE TN3/6

COMMITTED DEVELOPMENT: MILLER HOMES
3/2019/0071 110 DWELLINGS
AM & PM PEAK HOURS



Key:

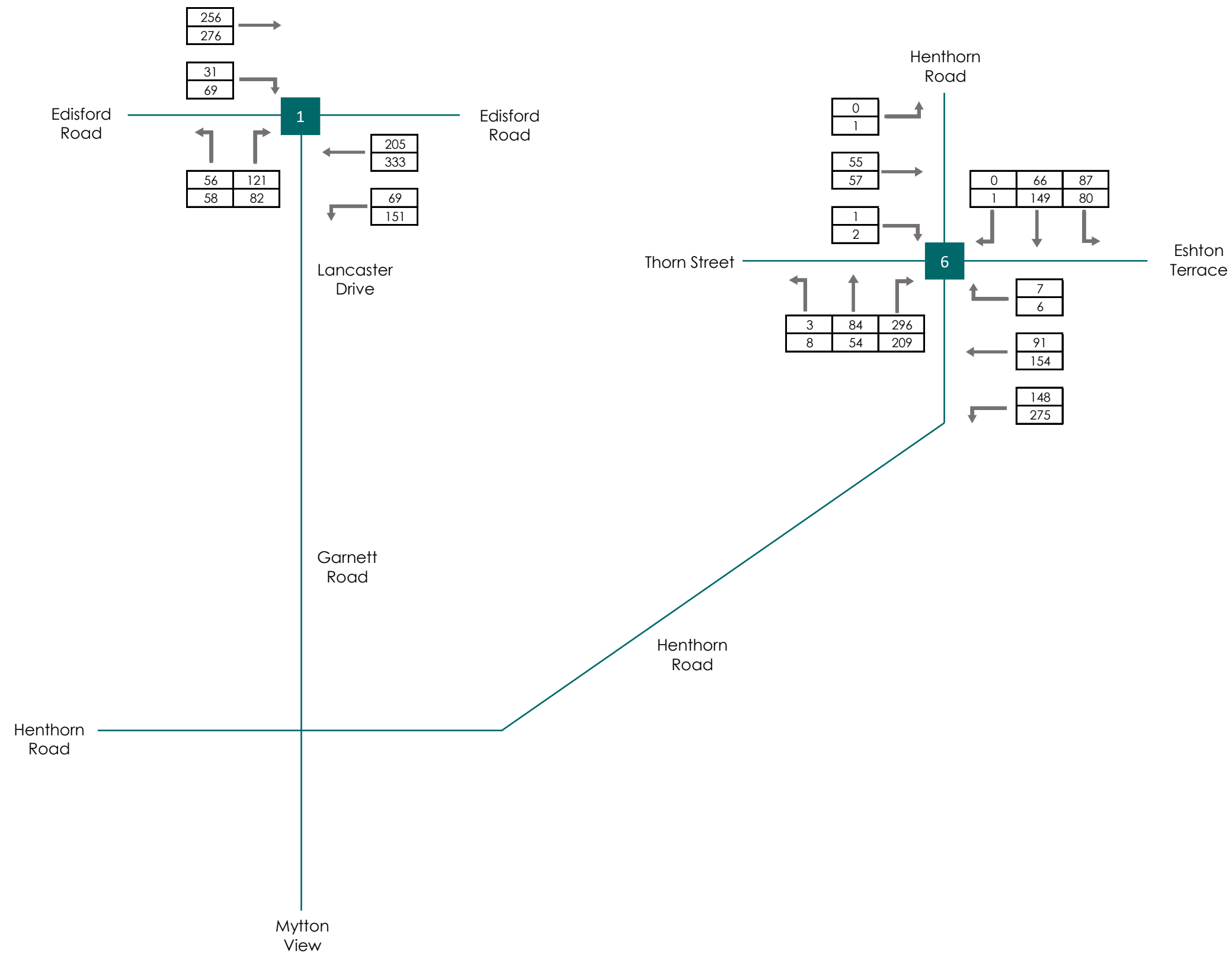
Priority Control

AM 0815-0915

PM 1615-1715

FIGURE TN3/7

BASE: 2024
TN3/3+ TN3/5 + TN3/6
AM & PM PEAK HOURS



Key:

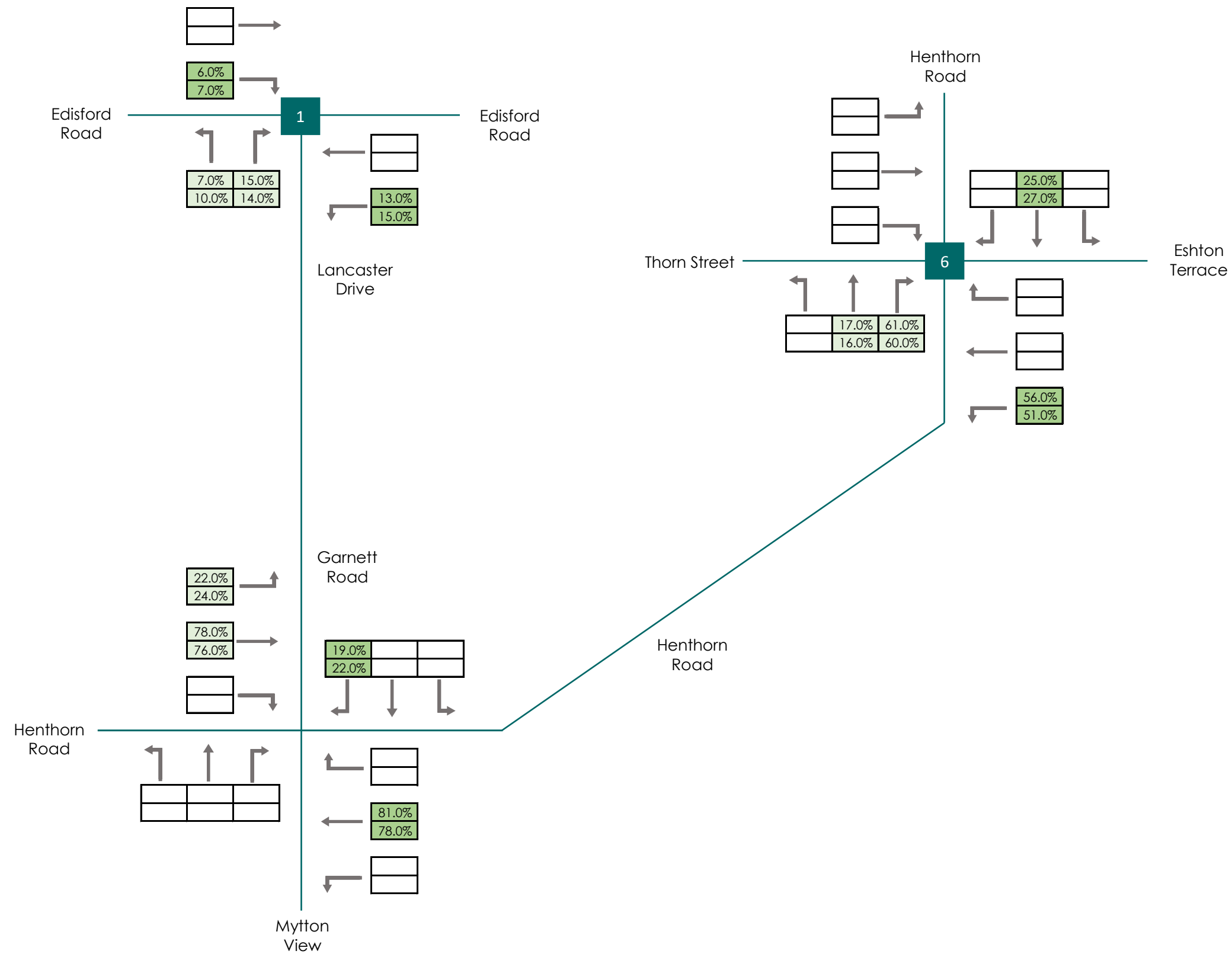
Priority Control

AM 0815-0915

PM 1615-1715

FIGURE TN3/8

BASE: 2029
TN3/4 + TN3/5 + TN3/6
AM & PM PEAK HOURS



Key:

Priority Control

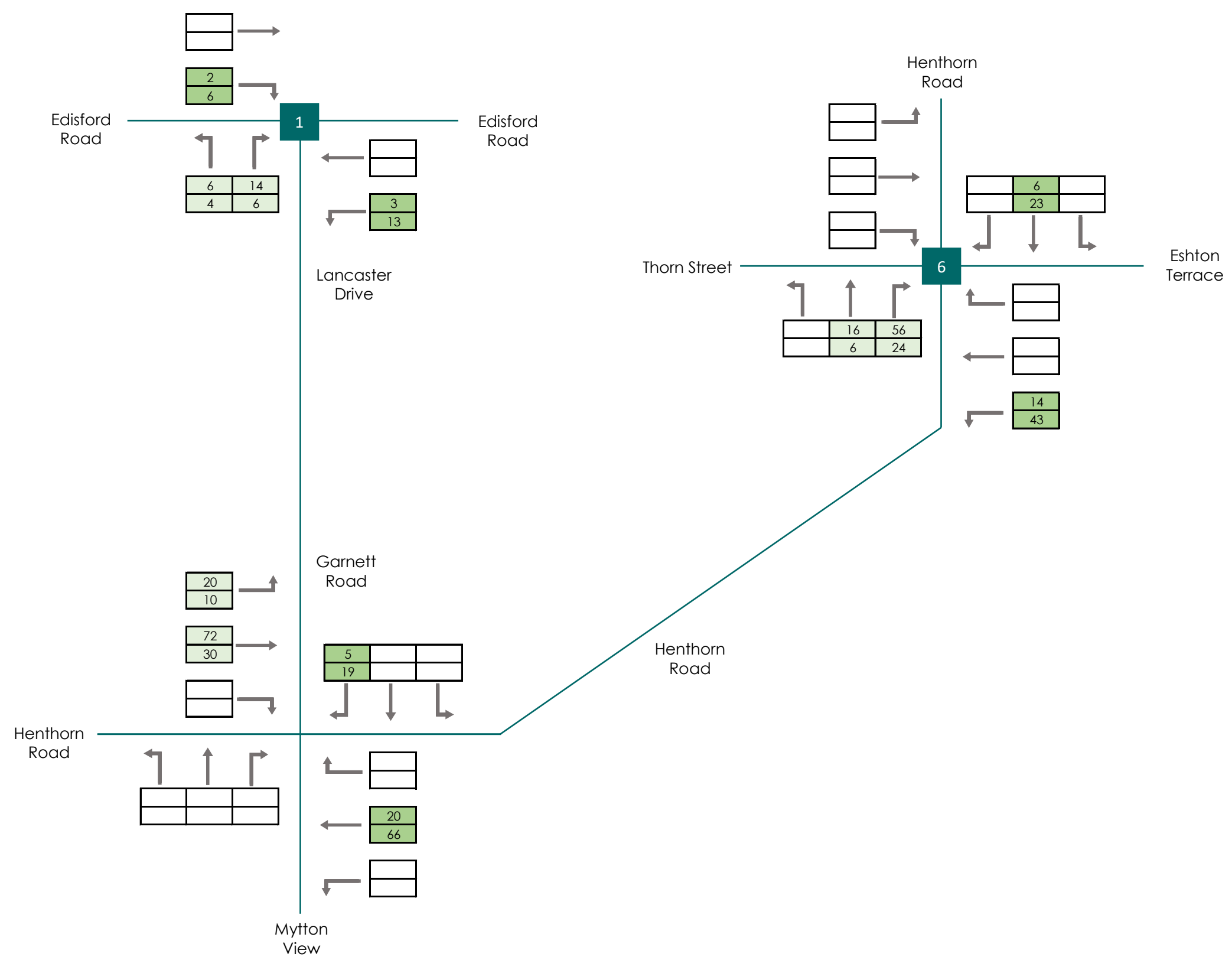
Notes:

1. Distribution based on recorded pattern of turning movements in 2021 count

AM 0815-0915
PM 1615-1715

FIGURE TN3/9

% DISTRIBUTION
AM & PM PEAK HOURS



Key:

Priority Control

AM 0815-0915
PM 1615-1715

Assumes 160 dwellings

	ARR	DEP	2WAY
AM	25	92	117
PM	85	40	123

FIGURE TN3/10 GENERATED TRAFFIC: PROPOSED DEVELOPMENT
AM & PM PEAK HOURS

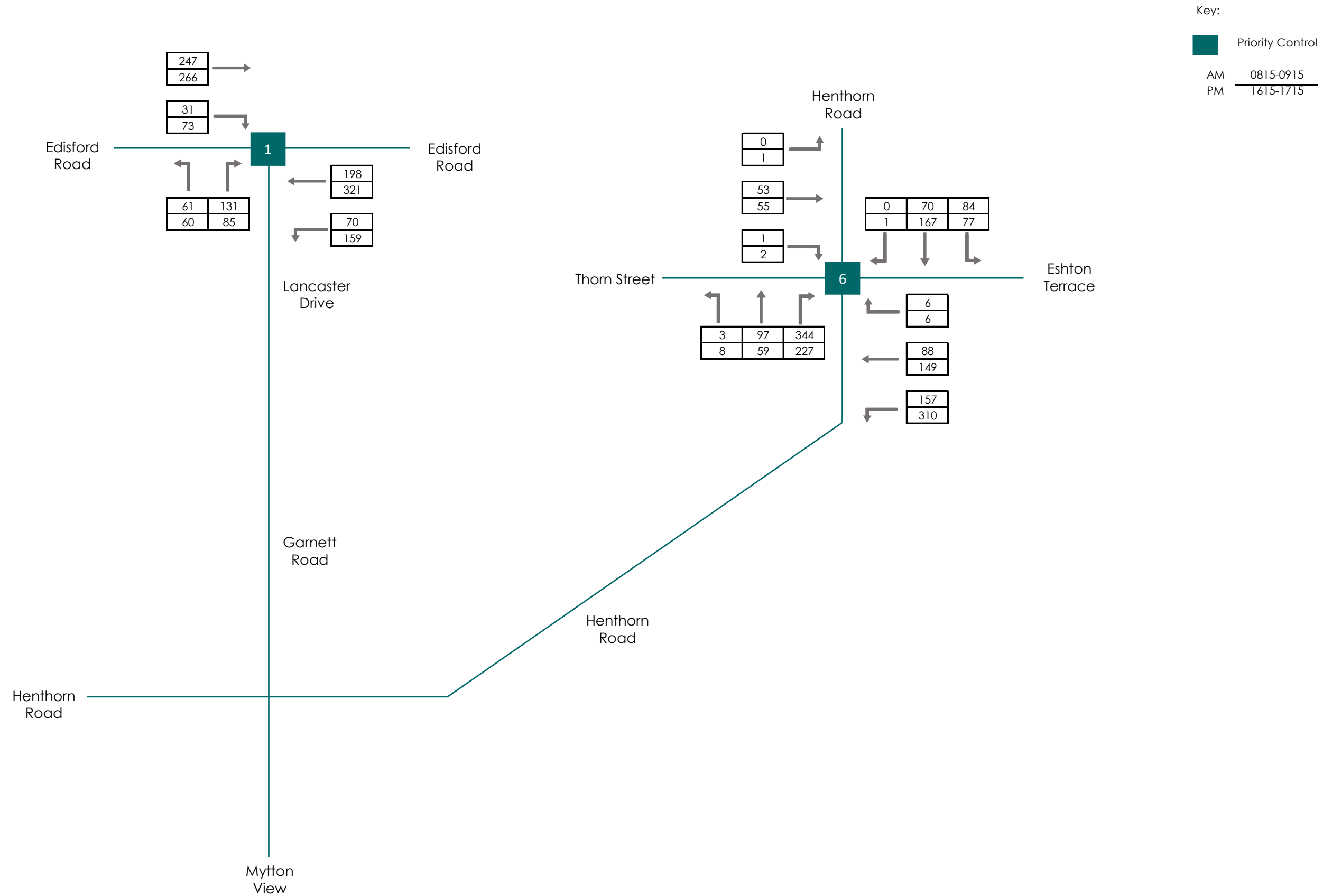


FIGURE TN3/11

WITH DEVELOPMENT: 2024
TN3/7 + TN3/10
AM & PM PEAK HOURS

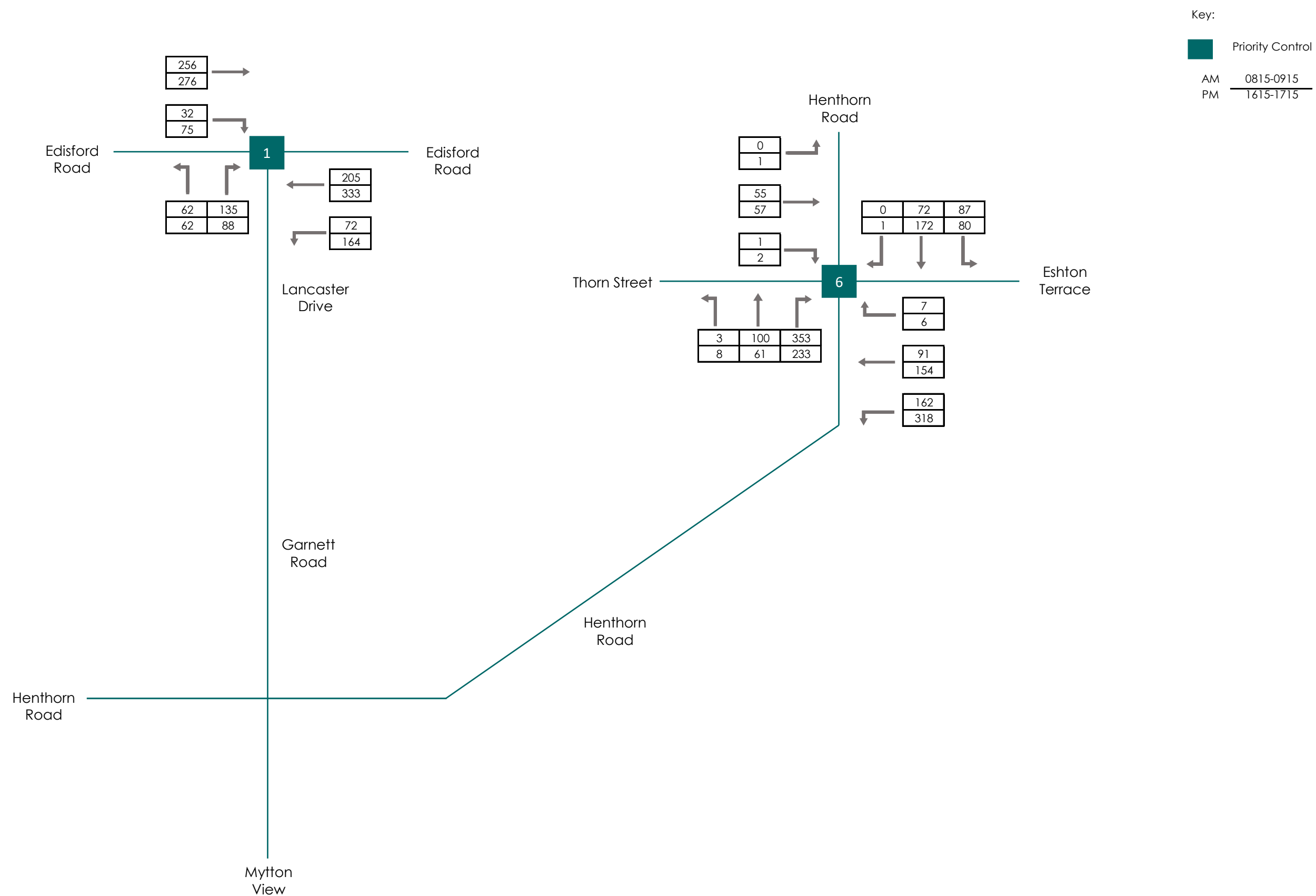


FIGURE TN3/12

WITH DEVELOPMENT: 2029
TN3/8 + TN3/10
AM & PM PEAK HOURS

MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
	OBSERVED	MODELLED	OBSERVED	MODELLED

Lancaster Drive	0.8	0.5	0.2	0.3
Edisford Road	0.0	0.1	0.0	0.2

Notes:

1. AHA queue survey 22.06.21,
2. Average spot queue observed over peak hour period,
3. Refer Figure TN3/1 for 2021 traffic count flows.

Table TN3/1 PICADY VALIDATION SJ1 Lancaster Drive/Edisford Road

MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	RFC	QUEUE (veh)	DELAY (secs/veh)	RFC	QUEUE (veh)	DELAY (secs/veh)

2021 Count, Existing Junction Geometry						
Lancaster Drive	0.33	0.5	11.59	0.24	0.3	10.39
Edisford Road	0.06	0.1	5.30	0.11	0.2	5.74

2024 Base, Existing Junction Geometry						
Lancaster Drive	0.41	0.7	13.40	0.35	0.5	13.10
Edisford Road	0.07	0.1	5.28	0.17	0.3	5.96

2024 With Development, Existing Junction Geometry						
Lancaster Drive	0.46	0.9	14.70	0.38	0.6	13.79
Edisford Road	0.07	0.1	5.30	0.19	0.4	6.10

2029 Base, Existing Junction Geometry						
Lancaster Drive	0.43	0.7	13.93	0.37	0.6	13.62
Edisford Road	0.07	0.1	5.27	0.18	0.3	5.98

2029 With Development, Existing Junction Geometry						
Lancaster Drive	0.57	1.3	19.37	0.40	0.7	14.38
Edisford Road	0.04	0.1	5.20	0.19	0.4	6.12

Notes:

1. Refer Drg No 1677/02 for existing junction geometry,
2. Refer Figure TN3/7 for 2024 Base traffic flows,
3. Refer Figure TN3/8 for 2029 Base traffic flows,
4. Refer Figure TN3/11 for 2024 With Development traffic flows,
5. Refer Figure TN3/12 for 2029 With Development traffic flows.

Table TN3/2 **PICADY RESULTS** **SJ1 Lancaster Drive/Edisford Road**

MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
	OBSERVED	MODELLED	OBSERVED	MODELLED

Thorn Street (W)	0.0	0.2	0.2	0.2
Henthorn Road (S)	0.1	1.3	0.2	0.5
Thorn Street (E)	0.8	0.8	1.8	2.1
Henthorn Road (N)	0.0	0.0	0.0	0.0

- Notes:
1. AHA queue survey 22.06.21,
 2. Average spot queue observed over peak hour period,
 3. Refer Figure TN3/1 for 2021 traffic count flows.

Table TN3/3 PICADY VALIDATION SJ6 Henthorn Road/Thorn Street

MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	RFC	QUEUE (veh)	DELAY (secs/veh)	RFC	QUEUE (veh)	DELAY (secs/veh)

2021 Count, Existing Junction Geometry						
Thorn Street (W)	0.14	0.2	10.39	0.14	0.2	9.50
Henthorn Road (S)	0.57	1.3	14.63	0.33	0.5	9.54
Thorn Street (E)	0.44	0.8	11.87	0.69	2.1	19.92
Henthorn Road (N)	0.00	0.0	0.00	0.00	0.0	5.41

2024 Base, Existing Junction Geometry						
Thorn Street (W)	0.16	0.2	11.38	0.16	0.2	10.39
Henthorn Road (S)	0.73	2.6	22.70	0.43	0.7	11.51
Thorn Street (E)	0.51	1.1	13.93	0.90	6.3	46.54
Henthorn Road (N)	0.00	0.0	0.00	0.00	0.0	5.30

2024 With Development, Existing Junction Geometry						
Thorn Street (W)	0.17	0.2	12.53	0.17	0.2	10.65
Henthorn Road (S)	0.88	5.6	39.71	0.47	0.9	12.42
Thorn Street (E)	0.55	1.2	15.50	0.97	9.8	65.08
Henthorn Road (N)	0.00	0.0	0.00	0.00	0.0	5.29

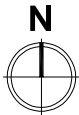
2029 Base, Existing Junction Geometry						
Thorn Street (W)	0.17	0.2	11.67	0.21	0.3	11.10
Henthorn Road (S)	0.76	2.9	24.79	0.45	0.8	11.83
Thorn Street (E)	0.53	1.1	14.52	0.94	8.2	57.02
Henthorn Road (N)	0.00	0.0	0.00	0.00	0.0	5.35

2029 With Development, Existing Junction Geometry						
Thorn Street (W)	0.18	0.2	12.73	0.17	0.2	10.78
Henthorn Road (S)	0.91	6.5	44.48	0.49	0.9	12.90
Thorn Street (E)	0.57	1.4	16.40	1.00	12.6	78.69
Henthorn Road (N)	0.00	0.0	0.00	0.00	0.0	5.26

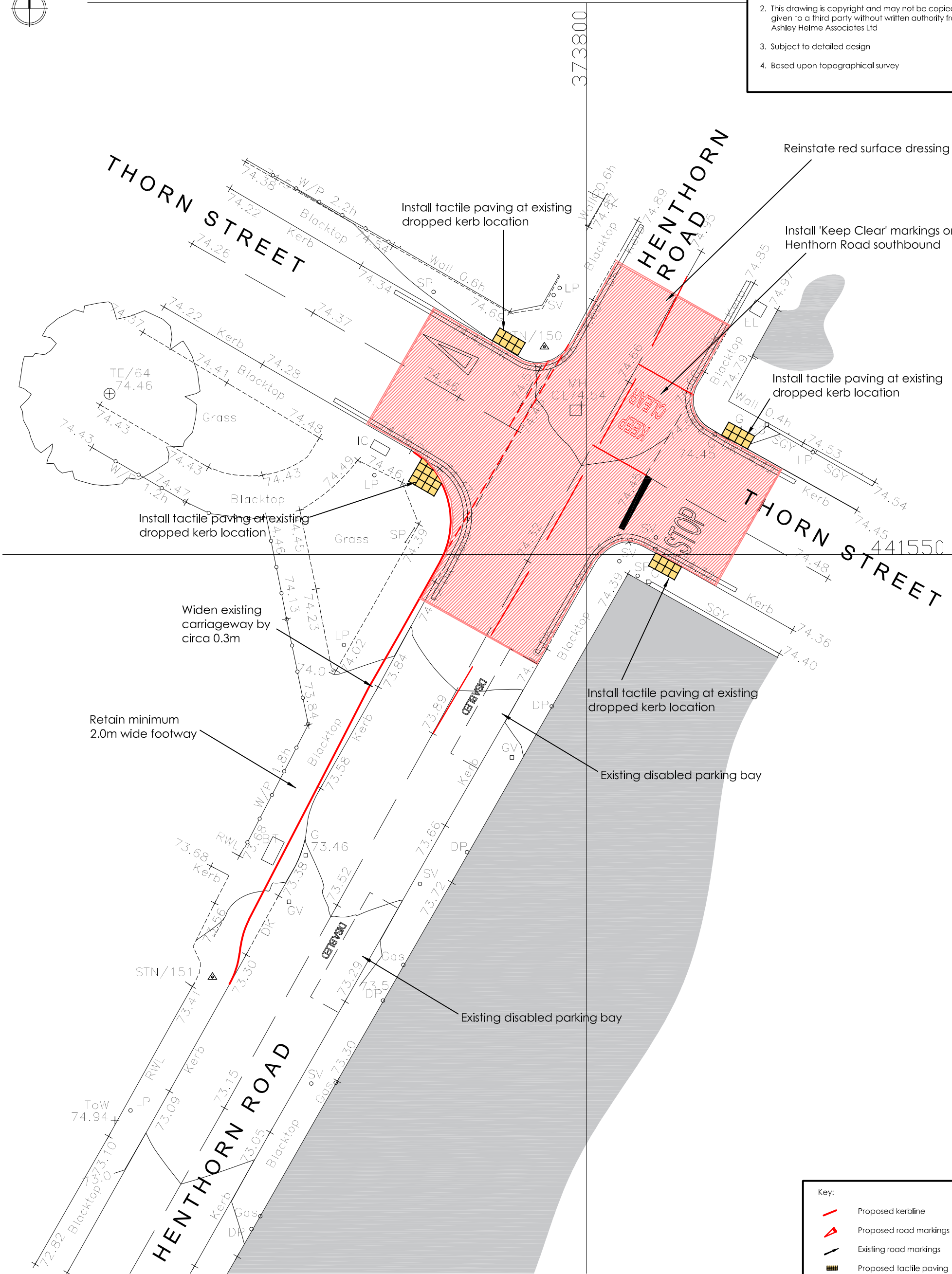
Notes:

1. Refer Drg No 1677/06 for existing junction geometry,
2. Refer Figure TN3/7 for 2024 Base traffic flows,
3. Refer Figure TN3/8 for 2029 Base traffic flows,
4. Refer Figure TN3/11 for 2024 With Development traffic flows,
5. Refer Figure TN3/12 for 2029 With Development traffic flows.

Table TN3/4



- Notes:
1. Do not scale from this drawing
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 4. Based upon topographical survey



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Key:	
	Proposed kerbline
	Proposed road markings
	Existing road markings
	Proposed tactile paving

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Title PROPOSED JUNCTION IMPROVEMENT: STUDY JUNCTION 6		Date JUNE 2021	Scale 1:200@A3	Rev			